

# Practice Test 3

PreAlgebra  
MATH 0302

① Find LCM for each group of numbers:

a. 5 and 7

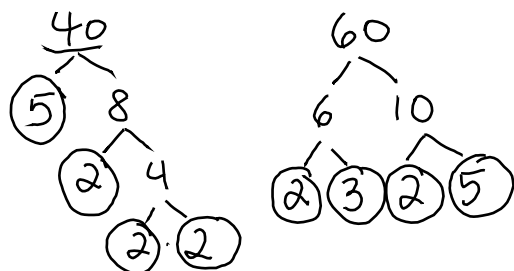
$$\begin{array}{l} 5 = 1 \cdot 5 \\ 7 = 1 \cdot 7 \end{array} \left. \vphantom{\begin{array}{l} 5 = 1 \cdot 5 \\ 7 = 1 \cdot 7 \end{array}} \right\} \text{LCM} = 5 \cdot 7 = \boxed{35}$$

8. 21 and 10

$$\begin{array}{l} 21 = 3 \cdot 7 \\ 10 = 2 \cdot 5 \end{array} \left. \vphantom{\begin{array}{l} 21 = 3 \cdot 7 \\ 10 = 2 \cdot 5 \end{array}} \right\} \text{LCM} = 2 \cdot 3 \cdot 5 \cdot 7 = \boxed{210}$$

② (a) 40 and 60

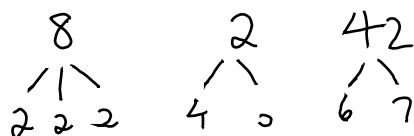
$$\begin{array}{l} 40 = \boxed{2} \boxed{2} \boxed{2} \boxed{5} \\ 60 = \boxed{2} \boxed{2} \boxed{3} \boxed{5} \end{array} \left. \vphantom{\begin{array}{l} 40 = \boxed{2} \boxed{2} \boxed{2} \boxed{5} \\ 60 = \boxed{2} \boxed{2} \boxed{3} \boxed{5} \end{array}} \right\} \text{LCM} = \underline{2} \cdot \underline{2} \cdot \underline{2} \cdot \underline{3} \cdot \underline{5} = 10 \cdot 12 = \boxed{120}$$



$$\text{CM } 40 \cdot 60 = 2400$$

(b) 8, 12 and 42

$$\begin{array}{l} 8 = \boxed{2} \boxed{2} \boxed{2} \\ 12 = \boxed{2} \boxed{2} \boxed{3} \\ 42 = \boxed{2} \boxed{3} \boxed{7} \end{array} \left. \vphantom{\begin{array}{l} 8 = \boxed{2} \boxed{2} \boxed{2} \\ 12 = \boxed{2} \boxed{2} \boxed{3} \\ 42 = \boxed{2} \boxed{3} \boxed{7} \end{array}} \right\} \text{LCM} = \underline{2} \cdot \underline{2} \cdot \underline{2} \cdot \underline{3} \cdot \underline{7} =$$



$$8 \cdot 3 \cdot 7 = 24 \cdot 7 = \boxed{\text{LCM} = 168}^2$$

③ Perform the indicated operations. Reduce to the lowest term

③ ~~2~~  $\left(-\frac{3}{4}\right) \cdot \left(-\frac{1}{8}\right) = + \frac{3}{4} \cdot \frac{1}{8} = \frac{3 \cdot 1}{4 \cdot 8} = \boxed{\frac{3}{32}}$

④ ~~8~~  $-10 \left(\frac{6}{8}\right) = -\frac{10}{1} \cdot \frac{6}{8} = -\frac{10 \cdot 6}{1 \cdot 8} = -\frac{\cancel{2} \cdot 5 \cdot \cancel{2} \cdot 3}{1 \cdot 8} = \boxed{-\frac{15}{2}} = \boxed{-7\frac{1}{2}}$

⑤  $2\frac{5}{7} \div 2\frac{1}{9} = \frac{19}{7} \div \frac{19}{9} = \frac{19}{7} \cdot \frac{9}{19} = \frac{\cancel{19} \cdot 9}{7 \cdot \cancel{19}} = \boxed{\frac{9}{7}} = \boxed{1\frac{2}{7}}$

$$\textcircled{6} \quad \frac{5}{6} \div (-30) = -\frac{5}{6} \div \frac{30}{1} = -\frac{5}{6} \cdot \frac{1}{30} = -\frac{\cancel{5} \cdot 1}{6 \cdot \cancel{6} \cdot 3} = \boxed{-\frac{1}{36}}$$

$$\textcircled{7} \quad \underbrace{\frac{3}{4} + \frac{1}{16}}_{\text{LCM} = 4 \cdot 4 = 16} = \frac{4}{4} \cdot \frac{3}{4} + \frac{1}{16} = \frac{12}{16} + \frac{1}{16} = \boxed{\frac{13}{16}}$$

$$\textcircled{8} \quad \frac{-1}{14} \oplus \left( \frac{-3}{4} \right) = -\frac{1}{14} - \frac{3}{4} = -\frac{1 \cdot 2}{14 \cdot 2} - \frac{3 \cdot 7}{4 \cdot 7} =$$

LCM:  $\begin{matrix} 14 = 2 \cdot 7 \\ 4 = 2 \cdot 2 \end{matrix} \} \text{LCM} = 2 \cdot 2 \cdot 7 = 28$

$$= -\frac{2}{28} - \frac{21}{28} = \boxed{-\frac{23}{28}}$$

$$\textcircled{9} \quad \underbrace{\frac{6}{7} - \frac{2}{11}}_{77} = \frac{6 \cdot 11}{7 \cdot 11} - \frac{2 \cdot 7}{11 \cdot 7} = \frac{66}{77} - \frac{14}{77} = \boxed{\frac{52}{77}}$$

$$\textcircled{10} \quad 45 - 12 \frac{3}{17} = 45 - 12 - \frac{3}{17} = 33 - \frac{3}{17} = 32 + 1 - \frac{3}{17} =$$

$$\rightarrow \left( 12 + \frac{3}{17} \right) = 32 + \frac{17}{17} - \frac{3}{17} = \boxed{32 \frac{14}{17}}$$

No - No!  ~~$33 - \frac{3}{17} = 33 \frac{3}{17}$~~

$$\textcircled{11} \quad 9 \frac{4}{5} + 6 \frac{1}{8} = \underline{9} + \frac{4}{5} + \underline{6} + \frac{1}{8} = 15 + \frac{4}{5} + \frac{1}{8} =$$

LCM = 40

$$= 15 + \frac{4 \cdot 8}{5 \cdot 8} + \frac{1 \cdot 5}{8 \cdot 5} = 15 + \frac{32}{40} + \frac{5}{40} = 15 + \frac{37}{40} = \boxed{15 \frac{37}{40}}$$

$$\begin{aligned}
 \textcircled{12} \quad 16 \frac{1}{8} - 3 \frac{5}{6} &= \underline{16} + \frac{1}{8} - \underline{3} - \frac{5}{6} = 13 + \frac{1}{8} - \frac{5}{6} = \\
 &= 13 + \frac{1 \cdot 3}{8 \cdot 3} - \frac{5 \cdot 4}{6 \cdot 4} = \\
 &= 13 + \frac{3}{24} - \frac{20}{24} = 13 - \frac{17}{24} = \underbrace{12 + \frac{24}{24}}_{13} - \frac{17}{24} = \boxed{12 \frac{7}{24}}
 \end{aligned}$$

$\text{LCM } 8 = 2 \cdot 2 \cdot 2$   
 $6 = 2 \cdot 3$   
 $\text{LCM} = 2 \cdot 2 \cdot 2 \cdot 3 = 24$

⑬ Simplify. Reduce!

$$\textcircled{a} \quad \frac{\frac{x^2}{5}}{\frac{x}{15}} = \frac{x^2}{5} \div \frac{x}{15} = \frac{x^2}{5} \cdot \frac{15}{x} = \frac{x \cdot \cancel{x} \cdot 3 \cdot \cancel{5}}{5 \cdot \cancel{1} \cdot \cancel{x}} = \frac{3x}{1} = \boxed{3x}$$

$$\textcircled{b} \quad \left( \frac{\frac{x}{3}}{\frac{x}{9}} \right) = \frac{x}{3} \div \frac{x}{9} = \frac{x}{3} \cdot \frac{9}{x} = \frac{\cancel{x} \cdot 3 \cdot \cancel{3}}{\cancel{x} \cdot \cancel{1}} = \boxed{3}$$

$$\left( \frac{\frac{x}{3}}{\frac{x}{9}} \right) = \frac{\cancel{x} \cdot 9}{3 \cdot \cancel{x}} = \boxed{3}$$

$$\begin{aligned}
 \textcircled{c} \quad \frac{\frac{4}{25} - \frac{3}{50}}{\frac{3}{10} + \frac{5}{20}} &= \frac{\frac{4 \cdot 100}{25} - \frac{3 \cdot 100}{50}}{\frac{3 \cdot 100}{10} + \frac{5 \cdot 100}{20}} = \frac{4 \cdot 4 - 3 \cdot 2}{3 \cdot 10 + 5 \cdot 5} = \\
 &= \frac{16 - 6}{30 + 25} = \frac{10}{55} = \\
 &= \frac{2 \cdot \cancel{5}}{11 \cdot \cancel{5}} = \boxed{\frac{2}{11}}
 \end{aligned}$$

$25 = 5 \cdot 5$   
 $10 = 2 \cdot 5$   
 $50 = 2 \cdot 5 \cdot 5$   
 $20 = 2 \cdot 2 \cdot 5$

LCM =  $2 \cdot 2 \cdot 5 \cdot 5 = 100$

(14) Simplify and Reduce.

$$\textcircled{a} \quad \frac{3}{5} \cdot \frac{1}{2} + \frac{1}{5} \div \frac{2}{3} = \frac{3 \cdot 1}{5 \cdot 2} + \frac{1}{5} \cdot \frac{3}{2} = \frac{3}{10} + \frac{3}{10} = \frac{6}{10}$$

$$\frac{6}{10} = \frac{\cancel{2} \cdot 3}{\cancel{2} \cdot 5} = \boxed{\frac{3}{5}}$$

$$\textcircled{b} \quad \frac{1}{2} + \frac{1}{4} \cdot \frac{1}{6} = \frac{1 \cdot 12}{2 \cdot 12} + \frac{1}{24} = \frac{12}{24} + \frac{1}{24} = \boxed{\frac{13}{24}}$$

(15) Sarah purchased  $\frac{3}{4}$  pounds pb candy and  $2\frac{7}{8}$  pound pp candy. How many total pounds of candy did Sarah buy?

$$\frac{3}{4} + 2\frac{7}{8} = \frac{3}{4} + 2 + \frac{7}{8} = 2 + \frac{3 \cdot 2}{4 \cdot 2} + \frac{7}{8} = 2 + \frac{6}{8} + \frac{7}{8}$$

$$2 + \frac{13}{8} = 2 + 1\frac{5}{8} = 3\frac{5}{8} \text{ pounds}$$

Answer: Sarah ~~buy~~ purchased  $3\frac{5}{8}$  pounds of candy.

(16) The Tran family is receiving a \$2400 tax refund. They decide to spend  $\frac{1}{4}$  (of) the money on a vacation, and use  $\frac{1}{8}$  (of) the money to pay off bills. How much money they will put in a saving account?

$$2400 - \frac{1}{4} \cdot \overset{600}{2400} - \frac{1}{8} \cdot \overset{300}{2400} = 2400 - 600 - 300 = 2400 - 900 = 1500$$

Answer: The Tran family will put in a saving account \$1500.

- $\times 4$   $\left( \begin{array}{l} \underline{12} \text{ people} \\ \underline{48} \text{ people} \end{array} \right. - \left. \begin{array}{l} 3\frac{1}{3} \text{ cups} \\ \times \text{ cups} \end{array} \right) \times 4$

$$\frac{12}{48} \quad \cancel{\neq} \quad \frac{3\frac{1}{3}}{X}$$

$$12x = 48, 3\frac{1}{3}$$

$$12x = 48 \cdot \frac{10}{3}$$

$$12x = \frac{6.8 \cdot 10}{3} = 2.8 \cdot 10$$

$$\frac{\cancel{12} \times}{\cancel{12}} = \frac{2 \cdot 8 \cdot 10}{12}$$

$$x = \frac{2 \cdot 2 \cdot 4 \cdot 10}{2 \cdot 2 \cdot 3} = \frac{40}{3} = 13\frac{1}{3}$$

$$4 \cdot 3\frac{1}{3} \neq \cancel{12\frac{1}{3}}$$

$$4 \cdot \frac{10}{3} = \frac{40}{3} = 13\frac{1}{3}$$

Answer:  $13\frac{1}{3}$  cups flour is needed for serving 48 people!

- 18) Jaci bought  $3\frac{1}{7}$  pounds of candy. If she brings  $\left(\frac{2}{3}\right)$  ~~to~~ pounds of the candy to work, how many pounds of candy will she have left?

$$3\frac{1}{7} - \frac{2}{3} = 3 + \frac{1}{7} - \frac{2}{3} = \underbrace{2 + \frac{7}{7}}_7 + \frac{1}{7} - \frac{2}{3} =$$

$$2 + \frac{8}{7} - \frac{2}{3} = 2 + \frac{8 \cdot 3}{7 \cdot 3} - \frac{2 \cdot 7}{3 \cdot 7} = 2 + \frac{24}{21} - \frac{14}{21} = 2 + \frac{10}{21} = 2 \frac{10}{21}$$

Answer: Jaci has left with  $2\frac{10}{21}$  pounds of candy